

REMARKS

Claims 1-22 and 24-25 remain pending in this application. Claims 5, 7, 11, 18, and 24 have been cancelled herein. Claims 1-4, 6, 8-10, 12-17, 19-22, and 25 remain under consideration.

Claims 1, 6, 8-10, 12-15, 19-20, 22, and 25 have been amended herein. Support for the amendments can be found in the specification. No new matter has been added.

Formalities:

The applicants wish to thank the examiner for noting the typographical error in Claim 8. This error has been corrected and the grounds of the objection are thus moot. Applicants respectfully request withdrawal of the objection.

The Claims are Definite to One of Skill in the Art

Claims 7,8, 11-22 and 24-25 stand rejected under 35 U.S.C. §112, second paragraph as allegedly indefinite for failing to particularly point out and distinctly claim the subject matter which applicants regard as their invention.

Claims 7, 11 and 14 and claims 8, 12-13, 15-22, and 25 dependent thereon were deemed indefinite for the recitation of “salt tolerant” because “salt tolerant” is allegedly a relative term lacking a comparative basis. Similarly, claims 13 and 21, and claim 24 dependent thereon were deemed indefinite for the recitation of “drought tolerant” because

“drought tolerant” is allegedly a relative term lacking a comparative basis. Applicants respectfully traverse this requirement.

The fact that claim language, including terms of degree, may not be precise does not automatically render the claim indefinite. *MPEP 2173.05(b)*. The acceptability of the claim language depends on whether one of skill in the art would understand what is claimed, in view of the specification. *Id.*

The claims as amended are clear to one of skill in the pertinent art, and terms such as tolerant, tolerance, resistant and resistance are commonly used with reference to stress responses and such terms are understood in the art. Additionally, the term “tolerant” is clearly defined in the specification as the “ability of a plant to overcome, completely or to some degree, the detrimental effect of an environmental stress or other limiting factor.” *Applicants’ Specification*, page 4, line to page 5, line 2. Thus, one of ordinary skill in the art would understand the terms salt-tolerant and drought tolerant – a comparative basis is understood as well.

Further, the U.S.P.T.O. regularly issues patents with such terms in the claims. U.S. Patent No. 6,281,411 to Adams *et al.* cited by the examiner in the instant prosecution, for example, includes in claim 1 a recitation of “tolerance or resistance to the transformed plant to a reduction in water availability.”

In view of the standards provided in the MPEP, the definitions provided in the specification, and the example from current U.S.P.T.O. practice in issuing such claims, Applicants respectfully request reconsideration and withdrawal of the indefiniteness rejection under 35 U.S.C. 122, second paragraph.

Claims 19 and 25 were deemed indefinite as substantial duplicates. In view of the amendments, Applicants note that claim 19 is directed to salt-tolerant plants containing the

transgene; claim 25 is directed to salt-tolerant plants containing the transgene , with the added limitation of growing faster than the a untransformed plant.

The Claims are Directed to Statutory Subject Matter

Claims 10 and 22 stand rejected under 35 U.S.C. §101 as allegedly directed to nonstatutory subject matter. The Office Action alleged that the claimed seeds were not limited to seeds containing the transgene, and may not be distinguishable from seeds occurring in nature. The claims as amended are directed to seeds wherein the seeds contain the transgene. This amendment should clarify the claimed subject matter as clearly statutory, thus obviating the grounds of the rejection. Applicants therefore respectfully request withdrawal of the rejection under 35 U.S.C. §101.

The Claims are Novel Over the Teachings of the Guo and Adams References

Claims 1-4, 7-17, and 20-22 stand rejected under 35 U.S.C. §102(a) as anticipated by by Guo *et al.* (Science in china, Series C, October 1997 40(5): 496-501) (“Guo”). Applicants respectfully traverse the rejection.

It will be appreciated that a claim is anticipated by a reference only if each and every element of the claim is found, either expressly or inherently, in that reference. *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631 (Fed. Cir. 1987).

Guo teaches transgenic graminaceous rice cells and plants comprising a transgene encoding betaine aldehyde dehydrogenase from *Atriplex hortensis*. The Office Action alleges that the transgenic plants of Guo were shown to be salt-tolerant (page 496 Abstract; page 499

Figure 3). Guo does not teach that the plants can grow significantly faster at either 0.8% or 1.2% NaCl, or that the plants are also drought tolerant. The Office Action alleges that such features would be inherent in the plants of Guo.

The Applicants' claims are generally directed to transgenic turfgrass cells and plants comprising a transgene encoding a enzyme which biosynthesizes glycine betaine. The claims are further directed to transgenic cells and plants which are salt tolerant and drought tolerant and which grown faster at 0.8% NaCl or 1.2% NaCl than do equivalent untransformed plants.

Guo does not teach transgenic turfgrass cells or transgenic turfgrass plants.

Additionally, notwithstanding the Office Action's assertion that the salt tolerance would be inherent, Guo expressly teaches otherwise. In fact, Guo teaches that while the salinity tolerance of the rice plants was obviously higher than that of the controls, the transgenic plants could not survive the stress of 0.8% NaCl. "But transgenic plants were not obviously damaged until the NaCl was up to 0.8%. 12 of the tested plants were alive on medium containing 0.8% NaCl, but died when they were transferred to soil n the preliminary testing." Guo *et al.*, page 498, Results section 2.1. Guo reiterates this teaching in the discussion section (page 500, section 3, first paragraph) wherein they state "[h]owever they were seriously impaired in 0.8% NaCl, and all of them died after they were transplanted to soil." In view of the fact that Guo does not teach turfgrass cells or plants, and explicitly teaches that the plants cannot even survive 0.8% NaCl, Guo cannot serve to anticipate Applicants' claims, as it does not teach each and every limitation of the claims expressly or inherently. Therefore, Applicants respectfully request that this rejection be withdrawn.

Claims 1, 7-14, and 20-22 stand rejected under 35 U.S.C. §102(e) as allegedly anticipated by U.S. Patent No. 6,281,411 to Adams et al. ("Adams"). Applicants respectfully

traverse the rejection.

As stated above, a claim is anticipated by a reference only if each and every element of the claim is found, either expressly or inherently, in that reference. *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631 (Fed. Cir. 1987). Proof of anticipation (i.e. prior knowledge by others) is different from that of obviousness under 35 U.S.C. § 103, in that it requires that all of the elements and limitations of the claimed subject matter must be described, expressly or inherently, in a single prior art reference. *In re Robertson*, 169 F.3d 743, 745 (Fed. Cir. 1999); *Constant v. Advanced Micro-Devices, Inc.*, 848 F.2d 1560, 1571 (Fed. Cir. 1988). The single reference must not only describe, but must enable the claimed invention, including all claim limitations, with such clarity and detail as to establish that the subject matter already existed in the prior art and that its existence was recognized by persons of ordinary skill in the field of the invention. *Crown Operations International, Ltd. v. Solutia Inc.*, 289 F.3d 1367, 1375 (Fed. Cir. 2002); *In re Spada*, 911 F.2d 705, 708 (Fed. Cir. 1990).

Further, anticipation is a question of fact, as is the question of inherency. *In re Schreiber*, 128 F.3d 1473, 1477 (Fed. Cir. 1997). When anticipation is premised on inherency of limitations not expressly disclosed in the assertedly anticipating reference, it must be shown that the undisclosed information was known to be present in the subject matter of the reference. *Continental Can Co. USA, Inc. v. Monsanto Co.*, 948 F.2d 1264, 1269, 20 USPQ2d 1746, 1749-50 (Fed. Cir. 1991). An inherent limitation is one that is necessarily present; invalidation based on inherency is not established by "probabilities or possibilities." *Scaltech, Inc. v. Retec/Tetra, LLC.*, 178 F.3d 1378, 1384, 51 USPQ2d 1055, 1059 (Fed. Cir. 1999). (*Elan Pharm. v. Mayo Found. for Med. Educ. & Research*, 304 F.3d 1221 (Fed. Cir. 2002)).

Here, Adams teaches drought tolerant transgenic *Zea mays* cells and plants. Adams

does not teach transgenic turfgrass cells or plants, nor does Adams teach salt tolerant cells or plants. The Office Action alleges that the properties of salt tolerance at 0.8% or 1.2%, and the property of significantly faster growth under these conditions of environmental stress are inherent to the transgenic cells and plants. Applicants respectfully traverse the rejection.

The claims as amended are directed to salt tolerant transgenic turfgrass cells and plants. Claims are further directed to salt tolerant transgenic turfgrass cells and plants which grow faster at 0.8% or 1.2% NaCl than untransformed control plants.

Adams does not teach any salt tolerant plants, nor does Adams teach any turfgrass cells or plants. Thus, Adams does teach explicitly or inherently each and every limitation of the Applicants' invention. Additionally, the Office action alleges that the properties of salt tolerance of cells or plants to 0.8% or 1.2% NaCl, and significantly faster growth rates under these conditions are inherent. The teaching of Guo establish that these properties are not inherent to transformed even those containing a transgene of interest. While it is *possible* that the cells or plants of Adams possess the required functional elements or limitations, it is also quite possible that they do not. Since it is *possible* that the cells or plants of Adams do **not** possess the required limitation, just as those of Guo do not possess these required functional limitations, it cannot be said that the limitations are *necessarily* present in the plant. Accordingly, it cannot be said that the cells and plants of Adams inherently possess these required limitations.

Since Adams does not teach the required limitation relating to turfgrass cells or plant, nor the required limitations relating to salt tolerance, Applicants respectfully submit that the Adams reference cannot anticipate the instant claims. Applicants, therefore respectfully request the withdrawal of the rejection under 35 U.S.C. 102(e) with respect to the Adams reference.

The Claims are Nonobvious Over the Cited References

Claims 1-22 and 24-25 stand rejected under 35 U.S.C. 103(a) as allegedly unpatentable over Rathinasabapathi *et al.* (Planta 193: 155-62, 1994) ("Rathinasabapathi") in view of Hartman *et al.* (Bio/Technology, 12:919-23, 1994) ("Hartman"), Xiao *et al.* (GenBank Accession No. X69770, 1996) ("Xiao"), and Marcum (J. Am. Soc. Hort. Sci. 119:779-84, 1994) ("Marcum").

The Office Action alleges that it would have been *prima facie* obvious to combine the teachings of these references to transform a turfgrass with a transgene encoding betaine aldehyde dehydrogenase for the express purpose of making a salt or drought tolerant transgenic turfgrass with out any surprising or unexpected results. The Office Action further alleges that one of skill in the art would have been motivated to generate the claimed invention with a reasonable expectation of success.

The Office Action correctly states that Rathinasabapathi teaches transgenic tobacco cells and plants comprising a transgene encoding betaine aldehyde dehydrogenase from spinach and beet. Rathiniasapathi however does not teach turfgrass cells or plants, nor do they teach any cells or plants containg the transgene which are resistant or tolerant of osmotic stress. Applicants respectfully submit that, at best, Rathinasapathi provide an invitation to experiment as to whether transgenic cells or plants with increased levels of glycine betaine would provide resistance to osmotic stress. Rathinasabapathi explicitly state that "[I]t would be interesting to test whether this glycine betaine affords tolerance to osmotic stress."

Rathinasabapathi, page 161, column 1, paragraph 4. In addition.. Rathinasabapathi teach away from the present invention. Because the tobacco plants lacked choline monooxygenase, and therefore required exogenous betaine aldehyde in order to form glycine betaine, they

were not able to examine the results *in planta* required to determine if the modifications could introduce stress resistance. *Id.* at 160. Rather, they teach the importance of avoiding betaine aldehyde toxicity. *Id.* at 159. Thus, one of skill in the art would be led to primarily solve the problem of avoiding betaine aldehyde toxicity, and not directly to solving the problem of salt or drought tolerance through the accumulation of glycine betaine.

Rathinasabapathi provides nothing more than multiple invitations to experiment. Likewise, Rathinasabapathi cannot possibly inform the skilled artisan regarding the *in vivo* accumulation of glycine betaine in the absence of exogenous betaine aldehyde.

Applicants submit that only hindsight reconstruction could lead between the Applicants' claims and the Rathinasabapathi reference. Thus, notwithstanding the admitted art-known sequence of Xiao for the *Atriplex hortensis* BADH coding sequence, Rathinasabapathi taken in view of Hartman and Xiao still could not lead to the Applicants' claimed invention. Even if one of skill were to overcome the limitations of Rathinasabapathi, combining the teachings of Hartman would not help. Hartman teaches biolistic transformation of turfgrass. However, Hartman teaches creating suspension cultures from calli and then using the suspension cultures for transformation. Hartman states that "[t]he condition of the suspension culture was extremely important but unpredictable." *Hartman*, page 922, column 1, paragraph 3. Further, Hartman also invites one of skill to experiment in teaching "Bombarded callus may be more stable, and is currently under consideration." *Id.* Finally, Hartman was not able to set seed from their transformed plants. "Progeny testing was not attempted as seed set was not successful in available growth chamber conditions." *Id.* at 922, column 2, paragraph 1. The teachings of Hartman cannot cure the deficiencies in Rathinasabapathi. Thus, Applicants' respectfully submit that combining Hartman, Xiao and Rathinasabapathi, at best, would lead a skilled artisan to try (experiment) to transform

turfgrass calli under unknown conditions into a plant for the primary purpose of preventing betaine aldehyde toxicity, to try to increase glycine betaine concentration, perhaps to see if any osmotic stress resistance would result.

The teachings of Marcum would do nothing to cure the deficiencies of Hartman and Rathinasabapathi. Marcum teaches that multiple mechanisms participate in the phenotype of salinity tolerance, and that the accumulation of cytoplasmic solutes is already adequate. For example, Marcum concludes, and one of skill in the art would be led to believe that:

“In conclusion, salinity tolerance of the C4 turfgrasses in this study was related to Na^+ and Cl^- restriction from shoots. This process was aided by leaf salt glands in grasses of the subfamily Chlorioideae (manilagrass, bermudagrass, and Japanese lawngrass). Shoot Na^+ and Cl^- ion concentrations under saline conditions were sufficiently high in all grasses to necessitate vacuolar ion compartmentation and cytoplasmic compatible solute accumulation, which it is hypothesized, avoids ion toxicity. Proposed compatible solutes praline and glycinebetaine accumulated sufficiently for cytoplasmic osmotic adjustment in all grasses except centipede grass.”

Marcum, page 784.

Based on Marcum’s conclusion that glycine betaine accumulated sufficiently in these turfgrasses, the skilled artisan would not rationally be led to consider overexpressing enzymes to accumulate glycine betaine, when Marcum teaches that sufficient accumulation is already present. The skilled artisan would instead be tempted to look elsewhere, perhaps at mechanisms of restricting Na^+ and Cl^- ions from the shoots. Applicants respectfully submit that nothing in Marcum can be construed as overcoming what the other references lack to constitute a proper *prima facie* case.

Thus, Applicants respectfully assert that the *prima facie* case under 103(a) is insufficient and/or adequately rebutted. The references at best might make it obvious to try, but that is not the required standard. At worst, the references do not teach each and every

limitations of the claims even in combination, given the explicit teachings of the references which would lead a skilled artisan clearly away from the claimed invention. Accordingly, Applicants respectfully request reconsideration of the rejection and withdrawal in view of the above remarks.

The Subject Matter of the Claims is Adequately Described in the Specification:

Claims 1-2, 5-15, 18-22 and 24-25 stand rejected under 35 U.S.C. §112, first paragraph, as allegedly containing subject matter not described in the specification in such a way as to reasonably convey to one skilled in the art that the inventors had possession of the claimed invention. Applicants respectfully traverse this rejection and request reconsideration in view of the amendments to the claims and the following remarks.

The claims are generally drawn to transgenic turfgrass cells and plants comprising a transgene encoding an enzyme which synthesizes glycine betaine. In dependent claims, the enzyme is betaine aldehyde dehydrogenase, particularly from *Atriplex hortensis*. The cells are salt tolerant and grow significantly faster than equivalent, untransformed cells under conditions of 0.8% and 1.2% NaCl environmental stress.

The adequacy of a written description is a question of fact which must be determined on a case-by case basis. *MPEP* 2163. A written description is given a strong presumption of adequacy and rejection of original claims for lack of written description should be rare. *Id.* An examiner must overcome the presumption of adequacy by putting forth, on a reasonable basis, sufficient evidence or reasoning. *In re Wertheim*, 541 F.2d 257, 263 (CCPA 1976). Arguing lack of literal support is not enough since the invention need not be described in *ipsis verbis* to satisfy the written description requirement. *Id.* at 265.

As the Federal Circuit has stated: “. . .the applicant must also convey with reasonable clarity to those skilled in the art that, as of the filing date sought, he or she was in possession of the invention. The invention is, for purposes of the ‘written description’ inquiry, whatever is now claimed.” *Vas-Cath Inc. v. Mahurkar*, 935 F.2d 1555, 1563-4 (Fed. Cir. 1991) (emphasis in original). See also *Regents of the Univ. of Cal. v. Eli Lilly & Co.*, 119 F.3d 1559, 1566 (Fed. Cir. 1997). A preponderance of evidence is required as to why a skilled artisan would not recognize a description of the claimed invention, as that is the perspective from which satisfaction of the requirement is measured. *Amgen Inc. v. Hoechst Marion Roussel, Inc.*, No. 01-1191, 01-1218, 2003 U.S. App. LEXIS 118 at *35 (Fed. Cir. 2003) citing *Lockwood v. Am. Airlines, Inc.*, 107 F.3d 1565, 1572 (Fed. Cir. 1997); see also MPEP 2163. The written description inquiry, therefore, focuses on a comparison between the specification and the invention referenced by the terms of the claim. *Id.* at *39.

Possession of the invention may be established through words, structures, figures, diagrams and formulas which fully set forth the claimed invention. *Lockwood*, 107 F.3d at 1572. “Generally there is an inverse correlation between the level of skill and knowledge in the art and the specificity of the disclosure necessary to satisfy the written description requirement.” MPEP 2163.

Here, the claims are adequately described because one of skill in the art would understand that the applicant was in possession of the claimed cells and plants at the time of filing. The Office Action properly concedes that the specification provides adequate guidance for the obtaining salt and drought tolerant turfgrasses comprising a transgene encoding betaine aldehyde dehydrogenase from *Atriplex hortensis*. However, the Office Action appears to improperly impose an *ipsis verbis* requirement for the written description which the federal courts have specifically stated is not required.

While the working examples are ample, they all use the sequence for the *Atriplex hortensis* BADH gene. However, properly construed, the claims are to the plants or the cells, and not to the transgene. The Office Action alleges that under a rule from *Eli Lilly*, a precise definition is required such as by structure, formula, etc. Applicants respectfully submit that the *Lily* rule for sequences or chemical formulas does not apply to such claims – here it is the cell or the plant containing the transgene which must be visualized by the skilled artisan, not the transgene itself. Applicants' specification provides ample guidance for the skilled artisan including several examples of sequences which are known, as well as precise functional description of the encoded enzyme activity. In addition, ample guidance for making exemplary plants wherein the transgene encodes an enzyme which synthesizes BADH. Not only would Applicants' specification render such a plant or cell obvious, but it specifically informs the public as to what applicant has invented and now claims. The members of the genus here, unlike in *Lily*, are not sequences, but plants and cells. The skilled artisan is provided ample guidance to visualize the members of the genus, given a transgene which corresponds to the described function in the claims, i.e. here, the combination of structural information and a detailed functional description is adequate to satisfy the written description requirement of 35 U.S.C. §112. Examples of glycine betaine synthesizing enzymes are known for example, from plant sources, such as spinach, *Atriplex*, and beet, as well as microbial sources. Applicants respectfully submit that any requirement for specific sequences is improper where as here, any general manipulative techniques are widely known in the art, specific example sequences are provided by reference to the databases or literature, ample working examples of the claimed cells and plants are provided, and clear guidance is available from the specification.

Therefore Applicants respectfully request reconsideration of the requirement for

additional structural or chemical formulae, reconsideration of the breadth of the amended claims and reconsideration of the amount of guidance provided relative to the claimed genera of cells and plants. Withdrawal of the rejection is respectfully requested.

A Process for Making and Using the Claimed Plasmid is Disclosed

Claims 4 and 17 stand rejected under 35 U.S.C. §112, first paragraph as not described in such a way as to enable one of skill in the art to make and use the invention. In particular the Office Action alleges that the specification does not disclose a repeatable process by which to obtain the claimed plasmid and thus requires deposit of the plasmid to make it available to the public. Applicants respectfully traverse this rejection and request reconsideration.

Applicants respectfully assert that this rejection is improper. Adequate description of the method for making the claimed plasmid is provided in the specification. The process of making the claimed plasmid is well within the ability of a skilled artisan. There is no objective reason to question the reproducibility (i.e. the ability to produce the exact same plasmid) of a basic technique of molecular biology known to all of skill in the art. In particular, the specification provides at page 16, line 29 through page 17, line 7 the exact method of obtaining the plasmid, pRTT120. The sequence of the required BADH cDNA is publicly available. The restrictions enzymes used are all well-known in the art. The sequences of the plasmids pAHC25 and pBluescript are likewise available to the public or commercially available. Applicants respectfully submit that given the guidance provided in the specification, including the information in Figure 1, and the high level of skill in the art, construction of the plasmid pRTT120 is rendered routine, and no deposit is required.

Accordingly, Applicants respectfully request reconsideration and withdrawal of the

rejection under 35 U.S.C. §112, first paragraph.

The Claims are Fully Enabled in Accordance With 35 U.S.C. §112, First Paragraph.

Claims 1-22, and 22-24 stand rejected under 35 U.S.C. §112, first paragraph as allegedly not enabled by the specification. The Office Action concedes that the specification is enabling for salt and drought tolerant transgenic turfgrasses encoding the betaine aldehyde dehydrogenase gene from *Atriplex hortensis* but is not enabling for other salt or drought tolerant plants comprising other transgenes, or for the above enabled transgenic turfgrass cells and plants which are able to grow significantly faster than the untransformed plants at the p=0.05 level of significance under stress conditions of either 0.8% NaCl or 1.2% NaCl. Applicants respectfully traverse this rejection for the claims as amended are fully enabled.

The question of enablement is a question of law, based on underlying factual determination. *Amgen, Inc. v. Hoechst Marion Roussel, Inc.*, No. 01-1191, 01-1218, 2003 U.S. App. LEXIS 118 at * 48 (Fed. Cir. 2003).

The Federal Circuit has consistently held that “the specification must teach those of ordinary skill in the art how to make and use the full scope of **the invention** without undue experimentation. *In re Wright*, 999 F.2d 1557,1561(Fed. Cir. 1993). The fact that a quantity of experimentation, even complex experimentation, may be required is not dispositive of the analysis (MPEP 2164.04). The key word is “undue,” not “experimentation”. *Angstadt*, 537 F.2d at 504. The factors to be considered in determining whether experimentation is undue include the breadth of the claims; the nature of the invention; the state of the prior art; the level of one of ordinary skill; the level of predictability in the art; the amount of direction provided by the inventor; the existence of working examples; and the quantity of

experimentation needed to make or use the invention based on the content of the disclosure. In re Wands, 858 F.2d 731, 737 (Fed. Cir. 1988). It is improper to conclude that a disclosure is not enabling based on analysis of only one of the factors while ignoring one or more of the others. MPEP 2164.01(a).

Nevertheless, not everything necessary to practice the invention need be disclosed. The Federal Circuit has stated that what is well-known is best omitted. In re Buchner, 929 F.2d 660, 661 (Fed. Cir. 1991). Further, the scope of enablement must only bear a reasonable connection to the scope of the claims. See, e.g., In re Fisher, 427 F.2d 833, 839 (CCPA 1970). Additionally, as the Federal Circuit recently reiterated, the law is clear that the specification need teach only one mode of making and using a claimed invention. Amgen, 2003 U.S. App. LEXIS 118 at *50.

Applicants respectfully submit that the claims as amended are fully enabled. Claims are generally directed to salt tolerant transgenic turfgrass cells and plants comprising a transgene encoding a glycine betaine synthesizing enzyme. Additionally claims are further directed to cells and plants which grow significantly faster than control cells.

Applicants respectfully submit that cells and plants which grow significantly faster than the untransformed plants at the p=0.05 level are enabled by the specification and figures (see Figure 2, reference letters). However, in an effort to advance prosecution, applicants have amended the claims. Support for the amendments can be found in the specification.

In particular, since the Office Action acknowledges the claims to salt tolerant transgenic turfgrasses with the BADH gene from *Atriplex hortensis* are enabled, applicants focus on those aspects not conceded enabled. Applicants note that claims to transgenes other than BADH from *A. hortensis* are enabled. The synthesis of glycine betaine by various enzymes is necessarily similar. Although the working example exemplify the BADH from

A. hortensis, the specification also discusses other enzymes which are interchangeable. The Office Action cites unknown and undisclosed biochemical characteristics of such enzymes from nonexemplified sources but provides no specific references to support such a contention. To the contrary, references cited by the examiner such as Rathinasabapathi support the idea that glycine betaine biosynthesizing enzymes from various sources are quite capable of being expressed in plants and in carrying out the desired reaction. The specification, to be enabling, need not teach every single example, but in this case several examples of the genus of glycine betaine biosynthesizing are directly taught, while others are known in the art. The specification need not, and preferably does not teach what is already known in the art.

Here adequate information is provided for the skilled artisan to practice the invention – i.e. to make and use the transgenic turfgrass cells and plants. Any experimentation required would only be routine experimentation. In any case with plant transformation by biolistic means, a selection process is required and positional differences require selection of the most desirable transformants. This is understood by those of skill in the art. Additionally, the selection process for stress resistance is extremely simple where, as here, the control plants do not tolerate the stressor very well, if at all. Thus, applicants respectfully submit that the making and using of transgenes encoding enzymes which biosynthesize glycine betaine is fully enabled by the specification.

With respect to the growth rates of transformed versus untransformed plants, claims to cells and plants with these characteristics is fully supported in the specification. For example, Table 1 and Figure 2 clearly show the differences. Also at page 22, it is clearly stated therein that “B4, however, grew faster than the controls. Under 1.2% NaCl stress, the difference of salt tolerance between B4 and non-transgenic was very significant (Fig. 2B).”

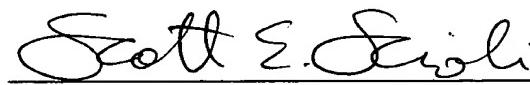
Similar results are reported for calli on page 19, line 33 through page 20, line 18. Based on the disclosure of specification, including the figures and the claims as filed, Applicants submit that the claims are fully enabled with respect to faster growth rates.

In view of the above remarks, Applicants respectfully request reconsideration and withdrawal of the rejection.

Conclusion:

In view of the amendments submitted herewith and the foregoing remarks, the presently pending claims are believed to be in condition for allowance. Applicants earnestly and respectfully request early and favorable reconsideration and withdrawal of the objections and rejections set forth in the December 17, 2002 Official Action, and allowance of this application.

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

Please cancel claims 5, 7, 11, 18, and 24.

Please amend the claims as follows:

1. (Amended) A salt tolerant transgenic turfgrass Graminaceous cell comprising a transgene encoding an a glycine betaine biosynthetic enzyme-of the glycine betaine biosynthetic pathway.
6. (Amended) The transgenic cell of claim 5 1, which is selected from the group consisting of Creeping Bentgrass, Perennial Ryegrass, Kentucky Bluegrass and Bermudagrass.
8. (Amended) The transgenic cell of claim 7 1, which grows significantly faster ~~that~~ than equivalent untransformed cells on a 0.8% NaCl medium ~~at the P=0.05 level of significance~~.
9. (Amended) A salt tolerant transgenic plant produced from the transgenic cell of claim 1.
10. (Amended) A transgenic seed Seeds produced from the transgenic plant of claim 9.
12. (Amended) The transgenic plant of claim 4+ 1, which grows significantly faster than the equivalent untransformed plant under 1.2% NaCl stress ~~at the P=0.05 level of significance~~.
13. (Amended) The transgenic plant of claim 4+ 1, which is also drought tolerant.
14. (Amended) A salt-tolerant transgenic Graminaceous turfgrass plant which expresses a transgene encoding an a betaine aldehyde dehydrogenase enzyme-of the glycine betaine biosynthetic pathway.
15. (Amended) The transgenic plant of claim 14 comprising a transgene encoding betaine aldehyde dehydrogenase from a plant.
19. (Amended) The transgenic plant of claim 4+ 14, which is selected from the group consisting of Creeping Bentgrass, Perennial Ryegrass, Kentucky Bluegrass and Bermudagrass.
20. (Amended) The transgenic plant of claim 14, which grows significantly faster than the equivalent untransformed plant under 1.2% NaCl stress ~~at the P=0.05 level of significance~~.

22. (Amended) A transgenic seed Seeds produced from the transgenic plant of claim 14.

25. (Amended) The transgenic plant of claim 14 21, which is selected from the group consisting of Creeping Bentgrass, Perennial Ryegrass, Kentucky Bluegrass and Bermudagrass.